

AN EXTENSION OF THE RANGE OF WATER RAT *HYDROMYS CHRYSOGASTER* (MURIDAE) IN WESTERN AUSTRALIA WITH SOME IMPLICATIONS FOR RANGE AND DISTRIBUTION

by A. CHAPMAN
PO Box 264 Ravensthorpe, Western Australia 6346

and

B. M. Chuwen
Centre for Fish and Fisheries Research,
School of Biological Sciences and Biotechnology
Division of Science and Engineering, Murdoch University,
Perth, Western Australia, 6150

INTRODUCTION

In Western Australia the Water Rat *Hydromys chrysogaster* Geoffroy, 1804 is known from the Kimberley coast and rivers, the north-west coast including Barrow, Depuch, Bernier and Dorre Islands and the south west land division. The distribution is disjunct in that it is not known from the central west coast. In the south west, it is known coastally from Geraldton to Bremer Bay and inland along some larger rivers. In Western Australia the distribution and abundance of Water Rat is of conservation interest as it is designated by Department of Environment and Conservation as a priority four species i.e. 'a taxa in need of monitoring'.

In this paper we report an extension of range eastward along the south coast from Bremer Bay to Culham Inlet near Hopetoun. Although the linear

distance (80 km) is not great, the circumstances of its presence here may suggest a wider distribution than has previously been appreciated.

OBSERVATIONS AND INTERPRETATIONS

One of us, (BC), who has had previous experience with Water Rats, sighted one swimming in the Phillips River at Echo Pool at 33° 51.2'S, 120° 04.0'E in July 2003. The rat swam to shore and disappeared into a crevice in river side cliffs in Fitzgerald River National Park. In October 2009 AC located very recent Water Rat tracks in moist mud near the mouth of Steere River in Culham Inlet at 33° 53.9'S, 120° 05.4'E. This site is a linear distance of six kilometres from Echo Pool. The tracks were measured, photographed and the photographs sent to WA Museum for com-



Plate 1. Gross appearance of tracks in soft mud. The outer distance between tracks was 70.0 mm. Note tail slide.

parison with preserved material. The characteristics of the tracks that enable identification are their size, and arrangement of toes with four on the fore foot and five on the hindfoot and the granulated appearance of plantar skin on the hindfoot (see plates 1–3). Hind and fore feet prints were identified from drawings in Triggs (1992). The tracks were left between 5.30 am and 3.00 pm on the same day. Foraging in daylight hours is a Water Rat behavioural characteristic. (Olsen 2008). The tracks location was very close to a biological survey site designed for vertebrate fauna assessment with both cage and Elliott traps baited with 'universal' bait but no Water Rats were trapped.



Plate 2. Lower left hand corner shows hind foot with five toes partially obscuring front foot with four toes.



Plate 3. Enlargement of hindfoot print in Plate 2. Distance across track was 19.0 mm.

The water in the Phillips River at the time and place of the swimming rat was hypersaline with electrical conductivity (EC) of 111.8 mS/cm (noting that seawater EC is 52.0 mS/cm). At the tracks' location *Melaleuca cuticularis* was present as shrubland or low forest in multi layered stands corresponding to various cohorts of recruitment from 3 m to 7 m tall. *Melaleuca brevifolia* was also present in small discrete thickets as well as *Melaleuca viminea* as a narrow but distinct zone between *Eucalyptus utilis* woodland and *M. cuticularis* shrubland. In highly saline soil *Threlkeldia diffusa*, *Atriplex cinerea* and samphire were present either as understorey or as samphire marsh. In areas of brackish water seepage *Isolepis nodosus* and *Gahnia trifida* were present (see plate 4).



Plate 4. Vegetation type at location of tracks

Although there was no evidence that the rat had emerged from the inlet in the latter case, the water was also hypersaline at 105.0 mS/cm at this time and place.

DISCUSSION

Extensions of range are always of interest to biologists particularly as they sometimes challenge preconceptions about habitat occupancy and ecological tolerances. Taken together the observations that Water Rats will swim in hypersaline as well as oceanic water and that they may utilise a vegetation type which is abundant in the littoral zone of many south coast estuaries raises the possibility that they may be more widespread on the south coast than is commonly appreciated. Pertinent to this suggestion is that estuaries are spaced at relatively short distances along the south coast between Albany and Esperance. Furthermore, the

climate is considerably drier and rainfall more variable at Hopetoun than Bremer Bay than the relatively short distance between the two towns would suggest.

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REFERENCES

- OLSEN, P. 2008. Water Rat – In: *The mammals of Australia* (third edition). Eds S. Van Dyck & R. Strachan. 887pp. Reed New Holland, Sydney.
- TRIGGS, B. 1992. *Mammal tracks and signs – a field guide for south-eastern Australia*. 192 pp. Oxford University Press, Melbourne.